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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,340	10/02/2006	Johanna Buchert	Q95423	2600
23373	7590	09/02/2008		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CALANDRA, ANTHONY J	
			ART UNIT 1791	PAPER NUMBER
			MAIL DATE 09/02/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/583,340

Applicant(s)

BUCHERT ET AL.

Examiner

ANTHONY J. CALANDRA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 6/20/2007, 10/02/2006, 6/19/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Office Action

1. The communication dated 10/02/2006 has been entered and fully considered.
2. Claims 1-19 are currently pending.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-5, and 8-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-6, 9, and 12-20 of copending Application No. 10/583711. Although the conflicting claims are not identical, they are not patentably distinct from each other because the modifying agents of the instant application that prevent photoyellowing also act as signaling agents of the copending application. As the process for bonding the agents to the fiber by way of oxidation is the same, and the agents substantially overlap the applications are obvious over each other.

Instant claim 1 see copending claims 1, 2, 3, and 9. The compounds of the instant application would be at least detectable under mass spectrometry and visual color change (lack of photoyellowing).

Instant claim 2 see copending claim 12.

Instant claim 3 see copending claims 1, 2, 3, and 9.

Instant claim 4 see copending claim 4.

Instant claim 5 see copending claims 5 and 6.

Instant claim 8 see copending claims 5 and 6.

Instant claims 9, 10 and 11 see copending claims 3, 12, 13, and 14.

Instant claim 12 see copending claim 15.

Instant claim 13 see copending claim 16.

Instant claims 14 and 15 see copending claims 17 and 18.

Instant claims 16 and 17 see copending claims 19 and 20.

Instant claim 18 see copending claims 1, 2, 3, and 9.

Instant claim 19 see copending claims 1, 2, 3, and 9. It is *prima facie* obvious to change the sequence of adding ingredients.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claim 1-6, and 8-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7, 8, 11, 16, 17, 19, 20, 21, and 28. of copending Application No. 10/583712. Although the conflicting claims are not identical, they are not patentably distinct from each other because the modifying agents of

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the instant application that prevent photoyellowing also are agents that provide the lignocellulose with properties foreign to the fibers. As the process for bonding the agents to the fiber by way of oxidation is the same, and the agents substantially overlap the applications are obvious over each other.

Instant claim 1 see copending claims 1, 4, 5, 11, 16, and 17. The compounds of the instant application are agents that give the fibers properties foreign to the fiber.

Instant claim 2 see copending claim 2, 19, and 28.

Instant claim 3 see copending claims 1, 4, 5, 11, 16, and 17.

Instant claim 4 see copending claim 3.

Instant claim 5 see copending claims 4 and 11.

Instant claim 6 see copending claims 7 and 8.

Instant claim 8 see copending claims 11 and 15.

Instant claims 9, 10 and 11 see copending claims 2, 17, 19, 20, and 21.

Instant claim 12 see copending claim 22.

Instant claim 13 see copending claim 23.

Instant claims 14 and 15 see copending claims 23 and 24.

Instant claims 16 and 17 see copending claims 25 and 26.

Instant claim 18 see copending claims 1, 4, 5, 11, 16, and 17.

Instant claim 19 see copending claim 31.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 6, 7, 9-11, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
8. Regarding claim 6, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 7 is dependent on claim 6.

9. Claim 9 recites the limitation "catalyst" in line 2. There is insufficient antecedent basis for this limitation in the claim. The catalyst is mentioned in instant claim 3 not claim 1.

Claims 10, 11, and 13 are dependent on claim 9 and are similarly rejected.

10. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131

USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 12 recites the broad recitation 1 - 100,000 nkat/g, and the claim also recites 10-500 nkat/g which is the narrower statement of the range/limitation. The claim also states the limitation .00001 to 10 mg of enzyme per gram of dry matter which is a third range.

11. Regarding claim 13, the phrase "in particular" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

12. Regarding claim 14 the phrase "such as" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

13. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*,

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86 USPQ 481 (Bd. App. 1949). In the present instance, claim 16 recites the broad recitation 1 to 95%, and the claim also recites 2 to 40% which is the narrower statement of the range/limitation.

14. In claims 9 and 10, it is not clear what structures fall under and do not fall under the applicants limitation of “or similar structural groups” of claims 9 and 10. It would be unclear to a person of ordinary skill in the art to which compounds that the applicant may or may not consider ‘structurally similar’. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

15. In claim 12, the applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures, pH's, and substrate being oxidized an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-6, 8-11, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,187,136 PEDERSEN et al., hereinafter PEDERSEN.

As for claim 1 and 18, PEDERSEN discloses activating fibers with an oxidizing agent capable of activating the phenolic groups [abstract, column 8 lines 25-37]. PEDERSEN further

discloses attaching to the oxidized sites a modifying agent such as Ferulic acid [column 5 lines 20-36 and column 8 lines 55-60].

As for claim 2, PEDERSEN discloses that the activation takes place both by way of enzymes and chemically [column 7 lines 60-67 and column 8 lines 5 and 6].

As for claim 3, PEDERSEN discloses the reaction of fiber with an enzyme capable of catalyzing oxidation of phenolic structures [column 8 lines 25-30]. An enzyme is a type organic catalyst. PEDERSEN discloses the modifying agent of Ferulic acid which is grafted onto the pulp [column 10 lines 60-65]. Ferulic acid is a chemical which is capable of providing the lignocellulose fiber material with properties reducing the susceptibility to yellowing.

As for claim 4, PEDERSEN discloses that the enzymatic oxidation process occurs together and that the Ferulic acid is grafted onto the material, therefore the modifying agent is activated [column 8 lines 15-25 and column 10 lines 60-65].

As for claim 5, PEDERSEN discloses that Ferulic acid, the modifying agent, is grafted onto the material, [column 10 lines 60-65]. FERLULIC acid is a brightness reversion inhibitor.

As for claim 6, PEDERSEN discloses Ferulic acid the modifying agent [column 10 lines 60-65]. Ferulic acid is an unsaturated carboxylic acid. PEDERSEN also discloses other carboxylic acids [column 5 lines 20-36].

As for claim 8, PEDERSEN disclose Ferulic acid which is an antioxidant [column 10 lines 60-65].

As for claim 9-11, PEDERSEN discloses laccase, oxidases and peroxidases [column 6 lines 1-36].

As for claim 12, PEDERSEN discloses 0.0001 – 10mg/g of dry matter which is the instant claimed range [column 6 lines 60-67]. The applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant. PEDERSEN discloses 0.02 LACU/g -2000 LACU/g [column 6 lines 40-47] of enzyme where an LACU is measured under disclosed conditions [column 6 lines 55-60]. Until shown otherwise the examiner has interpreted these ranges to overlap with the instant claimed ranges [since the applicant fails to define the units].

As for claim 13, PEDERSEN discloses hydrogen peroxide [column 8 lines 4-10].

As for claim 14 and 15, PEDERSEN discloses oxygen and oxygen containing gases [column 7 line 65 to column 8 line 3].

As for claim 16, PEDERSEN discloses the overlapping range of 0.1 to 40% consistency [column 5 line 5-7], which the examiner has interpreted as overlapping with sufficient specificity to the instant claimed range.

As for claim 17, PEDERSEN discloses the encompassed range of 20 to 70 degrees C [column 8 lines 24-25].

As for claim 19, PEDERSEN discloses that the reaction can take place simultaneously or sequentially [column 4 lines 10-35].

18. Claim 12 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,187,136 PEDERSEN et al., hereinafter PEDERSEN.

As for claim 12, PEDERSEN discloses 0.0001 – 10mg/g of dry matter which is the instant claimed range [column 6 lines 60-67]. The applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant. PEDERSEN discloses 0.02 LACU/g -2000 LACU/g [column 6 lines 40-47] of enzyme where an LACU is measured under disclosed conditions [column 6 lines 55-60]. Until shown otherwise the examiner has interpreted these ranges to overlap with the instant claimed ranges [since the applicant fails to define the units].

Alternatively, at the time of the invention it would have been obvious to optimize the enzyme activity on pulp [2144.05 (II) (B) Optimization of ranges and result effective variables]. PEDERSEN clearly shows enzyme activity on pulp to be a result effective variable and therefore its optimization would have been obvious to a person of ordinary skill, absence evidence of unexpected results.

19. Claims 1-11, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Foreign Patent Publication CA2335253 CALL et al., hereinafter CALL.

As for claim 1, CALL discloses a method of treating a lignocellulose with an enzyme component system [pg. 33], in an oxidative coupling reaction [pg. 33 oxidative coupling of

phenols] with fatty acids present which the examiner has interpreted as the modifying agent [pg. 33 lines 18-20]. CALL further discloses the enzyme systems are used on high yield wood pulps for bleaching, during these bleaching steps the instant claimed steps take place [claim 37, pg. 2 lines 1-5, pg. 17 lines 10-20 and pg. 60 lines 1-32].

As for claim 2, CALL discloses that the method comprises both enzymes and the oxidant peroxide [pg. 33 lines 15-20].

As for claim 3, 4, 6, 7, and 18 CALL discloses that the enzymes can perform oxidation reactions on phenol system [pg. 33 lines 5-20]. CALL further discloses that fatty acids are present [pg. 33 lines 5-20 and pg. 60 lines 24-25] and specifically discloses the conjugated unsaturated monocarboxylic acids such as linoleic and linolenic acids [pg. 96 lines 11-13]. Examiner has interpreted the step of mixing these component together with lignocellulose as activating the modifying agent.

As for claim 5, CALL discloses linoleic and linolenic acids [pg. 96 lines 11-13] which are brightness reversion inhibitors.

As for claim 8, CALL discloses linoleic and linolenic acids [pg. 96 lines 11-13] which the examiner has interpreted as an antioxidant.

As for claim 9, CALL discloses CALL discloses that the enzymes can perform oxidation reactions on phenol system [pg. 33 lines 5-20].

As for claim 10 and 11, CALL discloses enzymes of the enzyme component system including lipase and others such as catalase [pg. 61 lines 11-12], catechol oxidase [claim 24], bilirubin oxidase [claim 24], horseradish peroxidase [pg. 78 line 19], manganese peroxidase and laccase [pg. 62 lines 13-15].

As for claim 13, CALL discloses peroxide and persulphates [pg. 33 line 20 and pg. 61 lines 9-14]

As for claim 14 and 15, CALL discloses air and oxygen in addition to H₂O [claim 15, pg. 61 lines 9-11].

As for claim 16, CALL discloses a consistency of 4 to 35% which falls within the instant claimed range [pg. 60 lines 19-20]

As for claim 17, CALL discloses a temperature of 40-95 degrees C which falls within the instant claimed range [pg. 60 line 15].

As for claim 19 the components are mixed together which the examiner has interpreted as occurring simultaneously [pg. 60].

20. Claim 12 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Foreign Patent Publication CA2335253 CALL et al., hereinafter CALL.

As for claim 12, CALL discloses 0.05 to 10 mg/g enzyme on wood which overlaps with sufficient specificity with the instant claimed range. The applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant. CALL discloses 250=10,000 IU per gram of pulp [pg. 60 lines 1-11] of enzyme where an LACU is measured under disclosed conditions [pg. 60 lines 1-11]]. Until shown otherwise

the examiner has interpreted these ranges to overlap with the instant claimed ranges [since the applicant fails to define the units].

Alternatively, at the time of the invention it would have been obvious to optimize the enzyme activity on pulp [2144.05 (II) (B) Optimization of ranges and result effective variables]. CALL clearly shows enzyme activity on pulp to be a result effective variable and therefore its optimization would have been obvious to a person of ordinary skill, absence evidence of unexpected results.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art Unit
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AJC